



A.D. 1855 N° 2608.

Electric Telegraphs.

(This Invention received Provisional Protection, but notice to proceed with the application for Letters Patent was not given within the time prescribed by the Act.)

PROVISIONAL SPECIFICATION left by William Henry Preece at the Office of the Commissioners of Patents, with his Petition, on the 19th November 1855.

I, WILLIAM HENRY PREECE, of 7, Bernard Street, Primrose Hill, in the
5 County of Middlesex, do hereby declare the nature of the Invention for
“**IMPROVEMENTS IN ELECTRIC TELEGRAPHS**” to be as follows:—

This Invention consists in an improved manner of arranging electric telegraphs to communicate in both directions at the same time on the same wire. In such telegraphs as ordinarily arranged two currents are taken from
10 the battery, one of which passes along the line wire, and the other passes in a local circuit, and is used to neutralise the influence of the outgoing line current on the receiving instrument, and in order to adjust the force of the local current to the force of the line current it has been usual to introduce resistance coils. Now, according to this Invention the force of the local
15 current is not adjusted, but in place thereof its influence is increased or diminished as required by altering its distance from the needle or other instrument on which it is arranged to act. The following is the manner in which it is preferred to arrange the apparatus:—Two magnetic needles weighted in the ordinary manner are placed astatically on an axis; round one
20 of those needles the line current passes, and round the other the local current,

Preece's Improvements in Electric Telegraphs.

in a coil, arranged so that the distance between its two parts can be adjusted to regulate its influence on the needle, which is placed between such parts; or the needle or needles may be hung between the poles of two electro-magnets, so arranged that the distance of one or both of them from the needle or needles may be adjusted, one of such electro-magnets being excited by the line and 5 the other by the local current; and sometimes, in place of passing two battery currents through the coils, I cause one battery current to pass through both of them, and I make an earth connection between the two coils, so as to diminish the quantity of the current after it has passed through the first; then, by adjusting the distance of the coils from the needles, a complete compensation is 10 effected in the case of outgoing signals, and the instrument is free to be acted on by incoming currents; and when a contact maker or pecker is used to complete a local circuit, such contact maker or pecker is placed on the same axis with the magnetic needles before mentioned; and a light hand of steel or other suitable material is also placed thereon, by moving which to the right 15 or left the force required to move the pecker can be adjusted as required. In order to communicate in both directions on the same wire when marking paper by chemical decomposition, I cause the line current to pass through the prepared paper at both the terminal stations; but at the sending station, at the same time that the line circuit is completed, a local circuit is also completed, 20 which passes a compensating current through the paper in the same place, but in the opposite direction.

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